ABSTRACT OF THE INVENTION

A single chip radio transceiver includes circuitry that enables received wideband RF signals to be down-converted to baseband frequencies and baseband signals to be up-converted to wideband RF signals prior to transmission without requiring conversion to an intermediate frequency. The circuitry includes a low noise amplifier, automatic frequency control circuitry for aligning a local oscillation frequency with the frequency of the received RF signals, signal power measuring circuitry for measuring the signal to signal and power ratio and for adjusting frontal and rear amplification stages accordingly, and finally, filtering circuitry to filter high and low frequency interfering signals including DC offset. The circuitry further includes a multi-stage mixer that produces current signal outputs from each mixing stage to a subsequent stage thereby avoiding a need for intermediate transconductance and output stages to convert between current signals and voltage signals.